Scott M. Matheson
[redacted]

January 31, 1977

Mr. Kenneth R. Poulson
Brush Wellman Incorporated
67 West 2950 South
Salt Lake City, Utah 84115

Re: Mining and Reclamation Plan
Topaz Mining Property
ACT/027/003

Dear Ken:

First of all I want to thank you and Lee for the excellent field tour of your operations. In light of the information we now have, we have come up with some suggestions for the final revision of your reclamation plan.

MR FORM 2, Page 3 of 6 - MINING SEQUENCE

In your description of designing the open pits you should state that the break in slope of all dumps will be rounded before spreading fines. We also suggest that sufficient fines be spread to provide a 6"-12" layer of fine material prior to abandonment. We realize that the thickness spread might depend upon the relative weathering susceptibility of the waste to be covered, with the waste piles of tuff perhaps requiring little or no addition of surface fines.

To provide for the safe abandonment of the pits, the highwalls should be rendered less hazardous. To achieve this, some sort of permanent, impassible barrier should be erected 20' or so back from the lip. We are suggesting that you commit yourself to erecting a narrow ridge of blocky, resistant rock at least 5' high and with steep side slopes. The rhyolite is probably the most resistant rock available at your mine.

MR FORM 2, Page 5 of 6 - GRADING AND REGRADING

(b) Commit to a 6"-12" depth of fine material over all dump surfaces

(c) Commit to mulching, fertilization, scarification or plowing, as may, or may not, be determined advisable by test plot experience.

(d) Mention your plans for allowing access to seasonally ponded water in the pits. You might also want to leave the hanging walls in a rough, post mining, benched condition which would trap water for revegetation of those slopes. The revegetation of some of these slopes soon after they are mined may aid in your operational phase if, and when, underground mining ensues in the pit bottoms.

MR FORM 2, Page 6 of 6 - TESTING

1(b) Commit to revegetation test plots to determine the feasability of various revegetation schemes.

2. Simply state that this will be answered by test plot research in cooperation with the Division.

3. Answer as in item 2 above.

MR FORM 2, Page 6 of 6 - REVEGETATION

1&2. Answer as in items 2 and 3 above

3. Ron has prescribed an initial revegetation plan and schedule. State that this scheme may be changed as per test plot experience.

SPECIES	LB/AC	FACING N-S-E-W	SEASON TO BE PLANTED
Russian Wildrye	2	All	Nov.-Jan.
Fairway crested wheatgrass	2	"	"
Standard crested wheatgrass	2	"	"
Indian ricegrass	1	"	"
Yellow sweetclover	2	"	"
Alfalfa (nomad)	1	"	"
Winterfat	2	"	"
Fourwing saltbush	2	"	"
	14/lb/ac.		

Planting should take place on a disturbed (scarified or disked) seedbed. Seed rates per acre are based on hand broadcasting methods, which should be followed by dragging by a chain or light rail over the seeded area.

Slopes over 20% would be scarified on contours to abate rill erosion and enhance water retention in the dump.

The actual plots to be established should include several varibles in the total acra of two acres. Actual placement and establishment of the test plots can be done to include these variables at a later date.

Among the variables there should be, aspect, slope, fencing protection, fertilization, mulching, and planting technique.

4. It appears that some sort of grazing control will be necessary. It seems that some, or most, of the revegetation can be performed during the mining activity. Sheep grazing might be controlled without any additional expense. Here again, the test plots will provide information on whether wildlife, or livestock, use will adversely affect revegetation attemps.

5. This is reasonable as it stands, however based on the availability of water in the area, and the large area to be reclaimed, we feel that irrigation should be deleted from the revegetation plan.

6. Based on test plot experience, you should commit to some minimal maintenance procedures, most important of which would be grazing protection followed by reseeding, fertilization, or other soil amendments.

We feel that inclusion of the above listed changes to your reclamation plan will make it complete and readily acceptable to the Division and our Board. By basing the revegetation procedures on test plot experience considerable flexibility is incorporated into your commitment.

If you have any questions or problems with our suggestions feel free to call on us.

Very truly yours,

DIVISION OF OIL, GAS, AND MINING

BRIAN W. BUCK
ENGINEERING GEOLOGIST

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